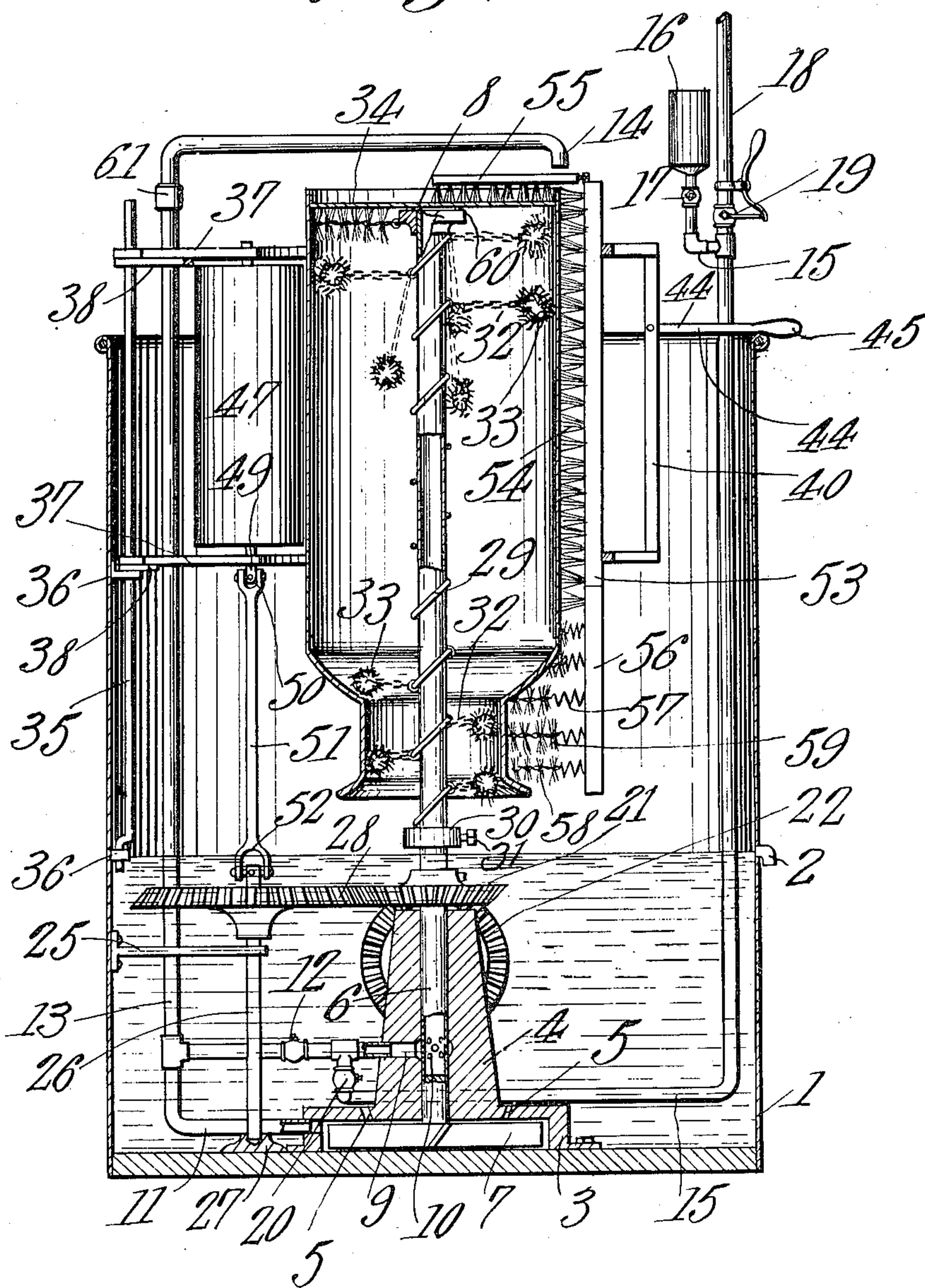


990,356.

2 SHEETS—SHEET 1.

Fig. 1.



Soren P. Hay,

Inventor

Witnesses

Wm. Bowlin
Verbet A. Lawson.

by

Cash on h/o.

Attorneys

S. P. HAY.
MACHINE FOR WASHING MILK CANS.
APPLICATION FILED SEPT. 6, 1910.

990,356.

Patented Apr. 25, 1911.

2 SHEETS—SHEET 2.

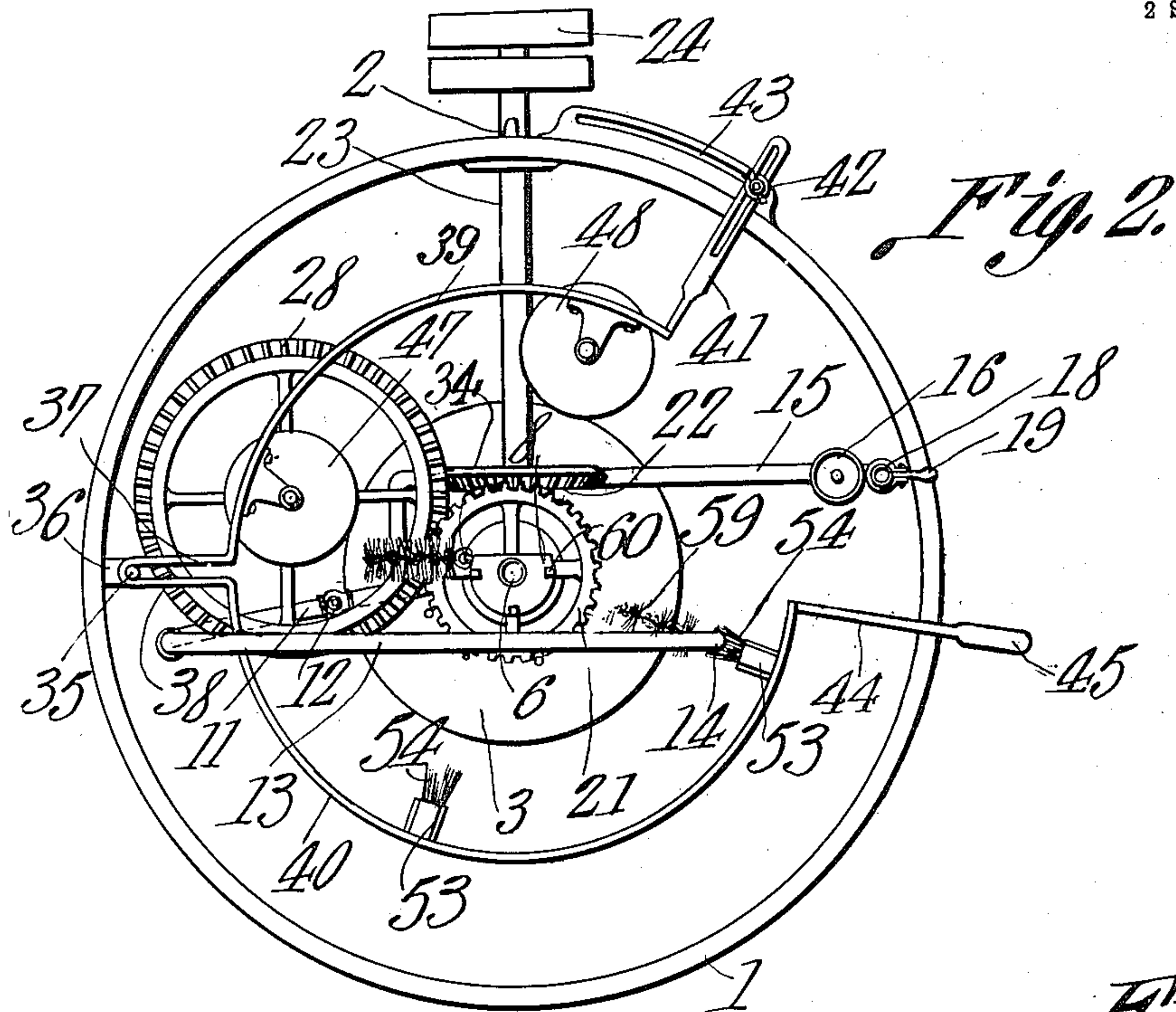


Fig. 4.

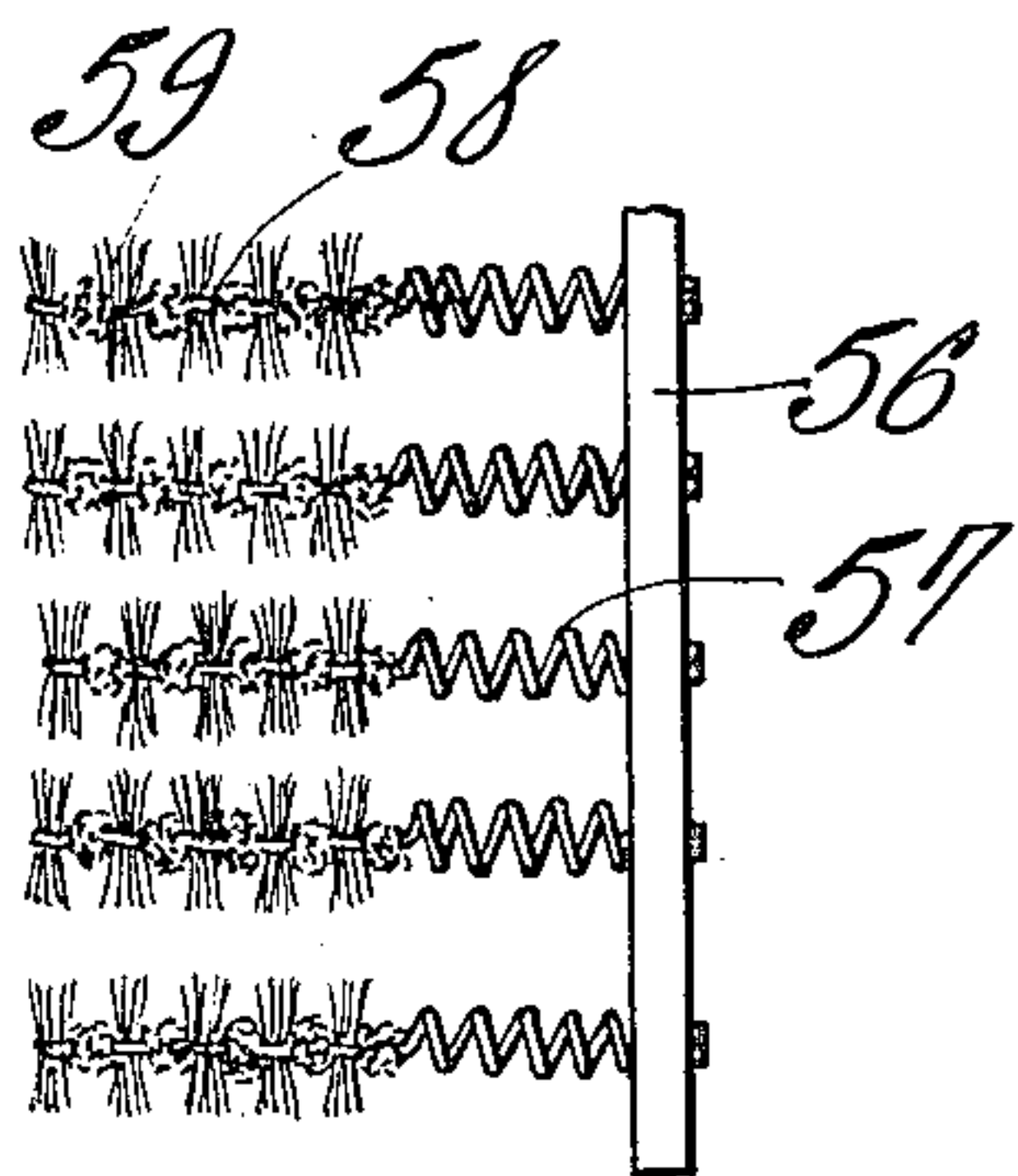
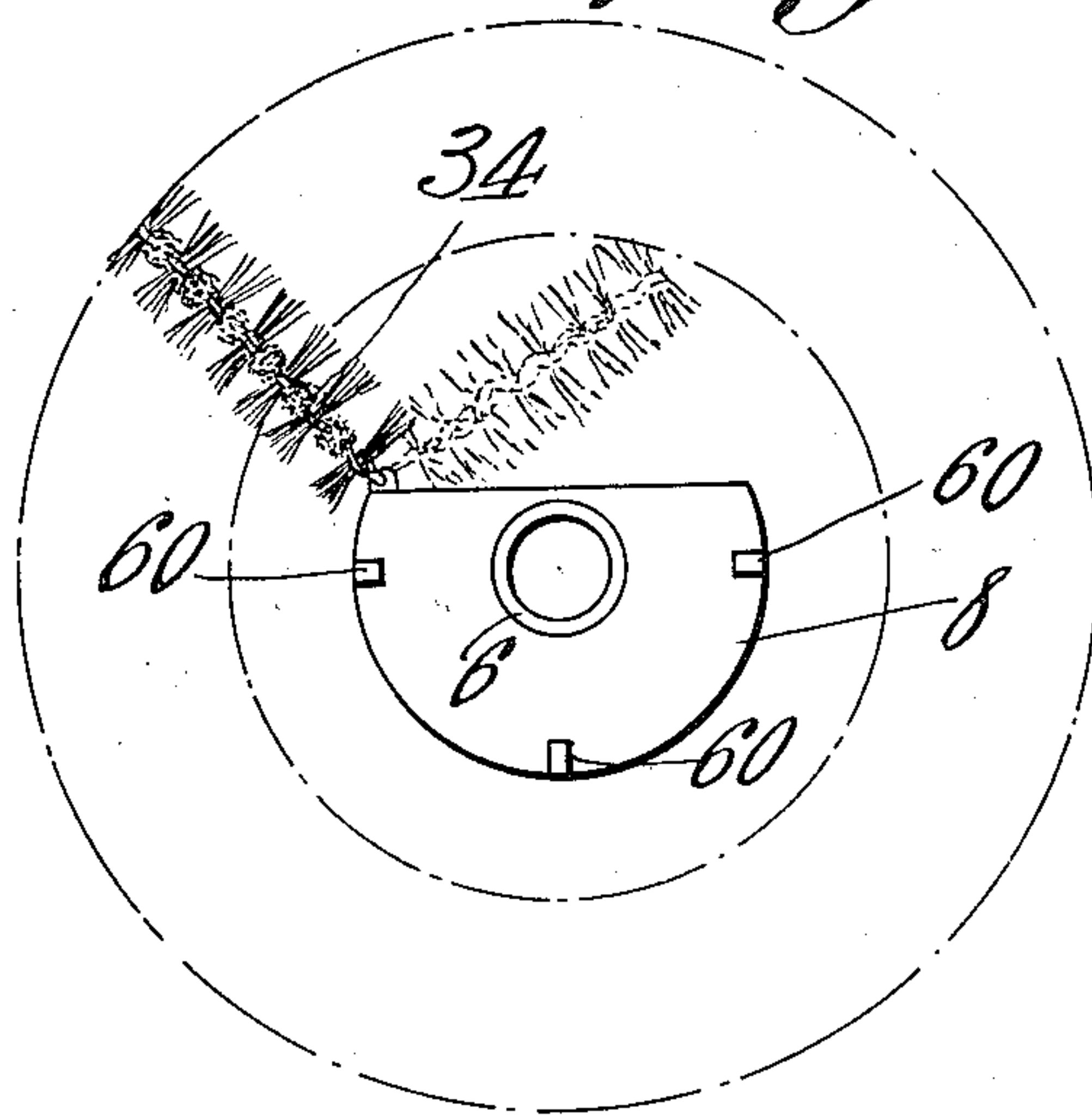


Fig. 3.



Witnesses

J. P. Dordick
Herbert K. Lawson

Soren P. Hay, Inventor

by *C. A. Snow & Co.* Attorneys

UNITED STATES PATENT OFFICE.

SOREN P. HAY, OF SPOKANE, WASHINGTON.

MACHINE FOR WASHING MILK-CANS.

990,356.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed September 6, 1910. Serial No. 580,685.

To all whom it may concern:

Be it known that I, SOREN P. HAY, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented a new and useful Machine for Washing Milk-Cans, of which the following is a specification.

This invention relates to machines for washing and sterilizing milk cans and one of its objects is to provide simple means whereby the can can be thoroughly scrubbed both inside and outside and subsequently rinsed and steamed.

A further object is to provide cleaning apparatus adjustable to cans of different sizes.

A still further object is to provide cleaning apparatus which is simple and compact in construction and which can be readily controlled so as to scrub either the inner or the outer surfaces of the can at will.

With these and other objects in view the invention consists in certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a central vertical section through the apparatus, a can being shown in position therein and some of the inner brushes being removed, the central shaft being shown partly in section. Fig. 2 is a plan view of the apparatus, the can therein being indicated by dotted lines. Fig. 3 is an enlarged detail view of one set of brushes such as used for cleaning the outer surface of the neck portion of the can. Fig. 4 is an enlarged end view of the supporting shaft and its cap and showing the brush in full and in dotted lines in two of its positions relative to the cap, cans of different diameters being outlined by dotted lines.

Referring to the figures by characters of reference 1 designates a tank having an overflow pipe 2 extending therefrom at a desired distance above the bottom thereof and secured upon the bottom of the tank is a pump casing 3 having a central upstanding extension 4 while a desired number of inlet ports 5 are formed within the casing 3. A tubular shaft 6, which may be closed in any suitable manner at its lower end, is journaled within the projecting portion 4 and its lower end extends into the casing 3 and has a rotary pump 7 secured to it and

mounted to rotate within the casing. The shaft 6 extends upwardly to a point above the tank or receptacle 1 and is open at its upper end and provided with a segmental cap 8 the upper face of which is flush with the upper end of the shaft. An inlet port 9 is formed within the projecting bearing portion 4 and that portion of the shaft 6 which is arranged across the port 9 is provided with a plurality of openings 10 so that liquid is free to pass from the port 9 and into the shaft 6 at all times during the rotation of said shaft.

A discharge pipe 11 extends from the casing 3 to the port 9 and has a check valve 12 therein designed to prevent liquid from flowing back to the casing 3 from said port 9. A branch pipe 13 extends upwardly from the pipe 11 to a point above the tank or receptacle 1 and terminates in a downwardly extending discharge nozzle 14. Another pipe 15 opens into the pipe 11 at a point between port 9 and valve 12 and extends upwardly to a water receptacle 16 located above the receptacle 1, there being a valve 17 for the purpose of closing communication between the receptacle 16 and its pipe 15. A steam pipe 18 opens into the pipe 15 at a point below receptacle 16 and valve 17, and has a valve 19 for closing communication between the two pipes 18 and 15. This pipe 15 has a check valve 20 therein adjacent the pipe 11 which is designed to prevent liquid from flowing from the pipe 11 and into pipe 15 in the direction of the receptacle 16.

A gear 21 is secured to the shaft 6 and bears downwardly on the projecting portion 4 so as to support the pump 7 out of contact with the bottom of the tank 1. This gear 21 meshes with a gear 22 which is secured to a shaft 23 journaled within the projecting portion 4 and within the wall of the tank, there being pulleys 24 or the like whereby motion may be transmitted to the shaft 23 from any suitable source.

An arm 25 is secured to and extends inwardly from the wall of the tank and a shaft 26 is journaled in this arm, and bears at its lower end, within a bearing block 27 secured to the bottom of the tank 1. A gear 28 is fastened to the upper end portion of this shaft 26 and meshes with the gear 21.

A coiled spring 29 is mounted on the tubular shaft 6 and bears, at its upper end, against the cap 8 while its lower end bears against a collar 30 which is adjustably

mounted on the shaft 6 and is adapted to be secured in any desired position by means of a set screw 31 or the like. This collar constitutes means whereby the convolutions of the spring can be adjusted toward each other or permitted to spring farther apart. Arranged upon the spring 29 at desired intervals are chains 32 which are pivotally connected to the spring and are provided at their outer ends, with brushes 33. These chains and brushes normally hang close to the shaft 6, as indicated by dotted lines in the upper portion of Fig. 1, but, when the shaft is rotated at a high speed, these chains 32 and the brushes will swing outwardly as will be hereinafter set forth. Those chains located upon the lower portion of the spring 29 are preferably shorter than the upper chains as shown. The cap 8 has an elongated brush 34 pivotally connected to it at one end of the flat edge of the cap, as shown especially in Fig. 2, this brush also hanging downwardly, normally close to the shaft 6 but being designed when the shaft is rotated to swing outwardly and upwardly.

A pivot rod 35 is mounted within brackets 36 extending inwardly from the wall of the tank 1 and mounted on this rod and above the upper bracket 36 are arms 37 and 38 extending from oppositely disposed arcuate frames 39 and 40 respectively. Frame 39 has a handle portion 41 extending from its free end and provided with a clamping bolt 42 arranged to slide within an arcuate guide 43 which is attached to the tank 1. Another handle 44 extends from the free end of the frame 40 and carries a grip 45 which is to be held by the operator. Parallel rollers 47 and 48 are journaled in bearings carried by the frame 39 and are parallel with the shaft 6, the roller 47 having its lower neck or trunnion 49 connected, by a universal joint 50 with an intermediate shaft 51 this shaft, in turn, being connected by a universal joint 52, with the upper end of shaft 26. The joints 50 and 52 are preferably loose so as to permit the frame 39 to be swung upon its pivot 35, it being understood that the movement of the roller 47 as a result of this swinging movement, will be very slight because of the fact that said roller is located close to the pivot 35. The arcuate frame 40 has parallel bars 53 secured to it, these bars being parallel with the shaft 6 and each of them carrying a brush 54 extending throughout the length thereof. An elongated brush 55 is pivotally connected to the upper end of one of the bars 53 and is adapted to swing vertically so as to assume any desired angle relative to the bar 53. One of the said bars 53 has an extension 56 at the lower end thereof, this extension being provided with a series of coiled springs 57 projecting from one face thereof and merging into stems 58 carrying

tufts of bristles so as to form brushes 59. By utilizing the coiled springs as the connections between the brushes and the extension 56, said brushes can be shifted so as to assume any desired positions relative to the extension 56.

When it is desired to use the apparatus for the purpose of cleaning and sterilizing cans, water or other cleansing fluid is placed in the tank 1 until the gears 21 and 28 are submerged. The frames 39 and 40 are then swung apart and the can to be cleaned is inverted and placed upon the upper portion of the shaft 6, the bottom of the can resting on spacing lugs 60 or the like projecting upwardly from the cap 8. Collar 30 is then adjusted longitudinally along the shaft 6 so as to shift the scrubbing devices toward or from each other by contracting the spring 29 or by permitting it to expand, this adjustment being such as to bring the pivot of the lower brush 33 in horizontal alignment with the lower end of the can. Brush 55 is then swung downwardly onto the top of the inverted can, as shown in Fig. 1, after which the frame 40 is adjusted toward the frame 39 so as to bring the rollers 47 and 48 and the brushes 54 into contact with the outer surface of the can. When the shaft 23 is operated the shaft 6 is rotated at a high speed and the pump 7 is thus operated and expels from the casing 3 all liquid admitted thereto through the ports 5. This liquid is directed through the pipe 11 and port 9 and through the openings 10 into the shaft 6. The liquid rises within this shaft and is discharged from the upper end thereof and deflected radially by the bottom of the can, it being thrown outwardly by centrifugal force and against the inner surface of the wall of the can. During the rotation of shaft 6 the chains 32 and brushes 33 are elevated by centrifugal force, said brushes being brought into contact with the inner surface of the can and operating to thoroughly scrub it, the can, which is gripped by the brushes 54 and the rollers 47 and 48 being in the meantime rotated in a direction opposite to the shaft 6 by the roller 47. As the can is thus turned the brushes 54 and 59 thoroughly scrub the outer surface thereof and the brush 55 scrubs the bottom of the can. Water is supplied to the outer surfaces of the can from the nozzle 14 to which a portion of the liquid expelled by the pump 7 is supplied. Brush 34 swings upwardly against the inner surface of the bottom and, should this brush be longer than the distance between the wall of the can and the arcuate edge of the cap 8, said brush will swing upon its pivot so as to assume a position between the straight edge of the cap and the wall of the can, as indicated in Fig. 4.

It will be seen from the foregoing description that cleansing fluid is constantly sup-

plied to both the inner and outer surfaces of the can and the said surfaces are thoroughly scrubbed by the brushes. As the water leaves the can it will return to the tank and can be again used it being understood however that a fresh supply of liquid is preferably constantly admitted to the tank. After the can has been thoroughly scrubbed in the manner described the rotation of the shaft 6 is stopped and fresh clean water is admitted to the pipe 15 and shaft 6 from the receptacle 16. The valve 19 is then opened and steam is admitted to the pipe 15, forcing the water therefrom and into the can through the upper open end of the pipe 6. The steam following this water into the can will thoroughly sterilize the can. During this last operation the brushes 32 are of course hanging downwardly out of contact with the can. After the can has been sterilized the frame 40 can be swung away from frame 39 so as to release the can. The upper end portion of the pipe 13 can then be swung laterally upon a pivot 61 provided therefor and the can lifted off of the shaft 6.

It will be apparent of course that during the rotation of the can the brushes 59 which are mounted on the springs 57, will thoroughly scrub the outer surface of the neck portion of the can, the springs permitting these brushes to adjust themselves to different angles found at this point.

Various changes can of course be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. Apparatus of the class described including a revoluble element, scrubbing devices suspended therefrom, means for shifting said devices toward or from each other, and means for rotating the element to swing the devices outward by centrifugal force.

2. Apparatus of the class described including a tubular receptacle supporting shaft open at its upper end, a water receptacle, a valved pipe connection between said receptacle and the shaft, said connection and shaft constituting means for holding water discharged from the water receptacle, and means for directing steam into said connection to blow the water from the connection and through said shaft.

3. Apparatus of the class described including a tank, means for supporting a receptacle therein, opposed structures movably supported within the tank, a scrubbing element carried by one of said structures, a revoluble receptacle engaging member upon one of the structures, and means for rotating said member.

4. Apparatus of the class described including a tank, receptacle supporting means therein, an adjustable element, a roller

mounted for rotation upon said element, a hand lever, and a scrubbing element carried by said lever for holding said receptacle in contact with the roller.

5. Apparatus of the class described including a tank, means for supporting a receptacle therein, a roller, means for rotating the roller, a scrubbing element, means for adjusting said element to clamp the receptacle against the roller, and means for elevating cleansing fluid from the tank to the outer surfaces of the receptacle.

6. Apparatus of the class described including a tank, oppositely disposed movable frames, means for supporting a receptacle between the frames, a roller journaled in one of the frames, means for rotating the roller, a scrubbing element carried by the other frame, and means for adjusting the frame to clamp the receptacle between the roller and the scrubbing element.

7. Apparatus of the class described including a tank, means for supporting a receptacle therein, means for rotating the receptacle, an adjustable brush engaging the outer surface of the receptacle, and separately movable spring supported brushes movable with said adjustable brush for engaging the outer surface of the neck portion of a receptacle.

8. Apparatus of the class described including a tank, means for supporting a receptacle therein, scrubbing devices carried by said supporting means, means for rotating the supporting means, means for rotating the receptacle in a direction opposite to the direction of rotation of said supporting means, and adjustably supported scrubbing devices shiftable into contact with the outer surfaces of the receptacle.

9. Apparatus of the class described including a revoluble receptacle supporting element, a segmental cap thereon, and a brush pivotally connected to the cap and shiftable across the cut-away portion thereof.

10. Apparatus of the class described including a tubular receptacle supporting element, a segmental cap thereon, a brush pivotally connected to the cap, and means for rotating said element to elevate the brush by centrifugal force, said brush being shiftable horizontally relative to the cap to vary the distance between the outer free end of the brush and the longitudinal center of said element.

11. Apparatus of the class described including means for supporting a receptacle, a bar shiftable toward the supported receptacle, a brush carried by the bar, supplemental brushes, and spring connections between said supplemental brushes and the bar.

12. Apparatus of the class described including a revoluble receptacle supporting element, a roll, means for actuating the roll,

to rotate the receptacle relative to the supporting element, a brush for clamping the receptacle upon the roll, a supplemental brush movably connected to the first mentioned brush and movable by gravity into contact with the uppermost surface of the receptacle, and means for directing cleansing fluid upon said surface.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature 10 in the presence of two witnesses.

SOREN P. HAY.

Witnesses:

ELSIE M. CURRY,
O. J. LAUGHON.